NOTES ON AUSTRALIAN DIPTERA. XXXV.

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(Nine Text-figures.)

[Read 25th March, 1936.]

Family Tachinidae.
Tribe Rutiliini.
Senostoma Macquart.

Townsend has recently published some notes on genotypes, including one dealing with *Senostoma variegata* Macquart which, he states, following Engel, is a synonym of *Diaphania testacea* Macquart.*

The name *Senostoma* will therefore replace *Prodiaphania* Townsend in our list of Australian Diptera, provided someone does not subsequently prove that this synonymy is erroneous.

I have already dealt briefly with the genus *Prodiaphania* in this series of papers (Proc. Linn. Soc. N.S.W., liv, 291, 1929), though I was at that time, and am even yet, uncertain of the exact identity of *testacea* Macquart. I accepted this name for what appears, from my material, to be the commonest species found in central Eastern Australia, particularly in the vicinity of Sydney, N.S.W., and only a careful examination of type material will prove whether I am correct or not.

The genus is not difficult to separate from its allies, the chief character being the very short palpi, which are not as long as the third antennal segment, all the other genera of the tribe having these organs much longer than the entire antennae.

I described one new species from Western Australia in my previous paper and distinguished one new variety of *testacea*, but it is very difficult to determine the exact status of some specimens on the basis of external characters, and a careful study of the genus in the field is required to check laboratory findings. There are, without doubt, several species involved, and below I present some additional data intended to facilitate the recognition of those now before me, though the question of synonymy is not attempted without access to the type specimens of certain old species.

This summary of results is based almost exclusively upon males submitted to me by various Australian correspondents.

In this study I have been compelled to make use of the male hypopygial characters to distinguish several species occurring in the eastern part of the continent and, as it is almost, if not quite, impossible to present in words a description that will give a brief but exact picture of these characters, I have

* *Ann. Mag. Nat. Hist.*, vol. 9, 1932, p. 40.

figured them herein. I have found that the principal distinguishing characters are found in the structure and armature of the inferior forceps (dististyli), the superior forceps (cerci) being of very similar form throughout my series. The most remarkable feature consists of a more or less developed extension on the inner side at the base of each dististylus which is furnished with hairs or bristles and which is entirely concealed when the hypopygium is in its normal retracted condition. In the species that I have dissected there is no extension of the dististyli in one, and here I have a suspicion that the species may be out of place in *Senostoma*, though it lacks hairs on the edge of the narrow stripe above the lower squama (parasquamal tuft). The proboscis is not in such a position that the palpi are visible without difficulty, but I make them out to be small, so I retain the species in this genus, the other characters being in accordance with the generic criteria.

I present below a key to the species which I hope will prove of value in the identification of, at least, those now in hand. I believe it will be found that there are a number of other species in Australia, to which continent the genus at present appears to be confined.

Key to the Species.

1. Males 2
   Females 9
2. Hind tibia with no posterodorsal submedian bristle 3
   Hind tibia with one or more submedian posterodorsal bristles 4
3. Hind metatarsus with a series of dorsal setulose hairs that are longer than the greatest diameter of that segment ..... *georgei* Malloch
   Hind metatarsus with much shorter dorsal hairs; hypopygium as Figure 1 .... *biarmata*, n. sp.
4. Upper squama not extending more than two-thirds of the distance to apex of the lower one; wing with no dark transverse mark near base; hind femur with widely separated strong bristles on the entire extent of the anteroventral surface, and some on the basal half of the posteroventral surface; fourth tergite of the abdomen with apical bristles strong and widely separated, about as long as the exposed part of the tergite ..... *cygnus*, n. sp.
   Upper squama extending almost to apex of the lower one; wing normally with a dark transverse mark near base; hind femur with the anteroventral bristles on apical half only and none on the basal half of the posteroventral surface.. 5
5. Wing with no dark mark near base ..... *testacea*, var. *claripennis* Malloch
   Wing with a dark transverse mark near base 6
6. Inferior hypopygial forceps as in Figure 2, with a long heavily chitinized fork at base which projects forward and is usually concealed, the inner side of the fork with dense short dark brown hairs; hind metatarsus slender, with a series of fine bristly hairs above that are a little longer than its diameter .. *furcata*, n. sp.
   Inferior hypopygial forceps either without a fork at base or, if forked, the inner branch much shorter, stouter, and furnished with longer hairs or bristles 7
7. Inferior hypopygial forceps with a stout basal process which is densely covered with long fine brown hairs (Fig. 3); hind metatarsus with short dorsal setulose hairs ..... *testacea* Macquart
   Inferior hypopygial forceps with comparatively few bristles or bristly hairs on a poorly developed basal prominence 8
8. Inferior hypopygial forceps with but few fine short hairs on dorsal surface of the exposed part (Fig. 4); hind metatarsus with the dorsal setulae not very strong and distinctly shorter than those on centre of the series on the anterodorsal surface of the hind tibia ..... *victoriae*, n. sp.
   Inferior hypopygial forceps with quite dense long bristly hairs on most of the dorsal surface of the exposed part (Fig. 5); hind metatarsus with strong bristly setulae on the dorsal surface that are about as long as those at centre of the anterodorsal surface of the hind tibia ..... *regina*, n. sp.

9. Arista with its longest hairs not more than twice as long as its basal diameter; second visible tergite of abdomen with a pair of well developed apical central bristles; large species, about 18 mm. in length ..... *georgei* Malloch
Arista with its longest hairs more than three times as long as its basal diameter.. 10
10. Hind tibia with a well differentiated bristle in the anterodorsal series beyond the middle; aristae entirely dark ..... sp. ?
Hind tibia with the anterodorsal series of short bristles quite even, no outstanding one beyond middle; aristae black at base, yellowish beyond 11
11. Large species, at least 15 mm. in length ..... *testacea* Macquart
Smaller species, not more than 13 mm. in length ..... *regina*, n. sp.; *victoriae*, n. sp.

SENOSTOMA GEORGEI (Malloch).

PROC. LINN. SOC. N.S.W., liv, 292, 1929 (*Prodiaphania*).

I have before me three females which apparently belong to this species, despite the presence of a distinct bristle on the posterodorsal surface of the hind tibia beyond the middle. All agree in the characters given in the key, the very much shorter haired aristae and invariable presence of a pair of strong bristles on the apex of the second visible tergite at centre readily distinguishing them from others in the material before me. Length, 18 mm.

Localities: Mundaring, and Eradu, W. Australia.

SENOSTOMA TESTACEA Macquart.

Dipt. Exot., ii, pt. 3, 278, 1843; Suppl. iv, pt. 2, 1851, 193 (*Diaphania*); Malloch, PROC. LINN. SOC. N.S.W., liv, 1929, 292 (*Prodiaphania*).

This identification ought to be checked by an examination of the type specimen which is said to be in Paris though not seen by Townsend. I am unable to say why Townsend has elected to erect a tribe for the reception of four genera including this and *Chaetogaster*, naming it Senostomatini. These two genera have the suprasquamal hairs lacking, but his *Philippoformosia* has these hairs present, so it can not be upon that basis that the tribe was erected.

The present species is one of a group of five that are very similar in general coloration and structure. I have separated one, *biarmata*, from the others on the lack of a posterodorsal bristle near the middle of the hind tibia and, in addition to this character, the hypopygium is very distinct. The others are all rather alike, being of the same testaceous yellow colour on most of the head, the humeri, usually the apex of the scutellum, and extensively on the sides of the abdomen, the female having this last feature less pronounced.

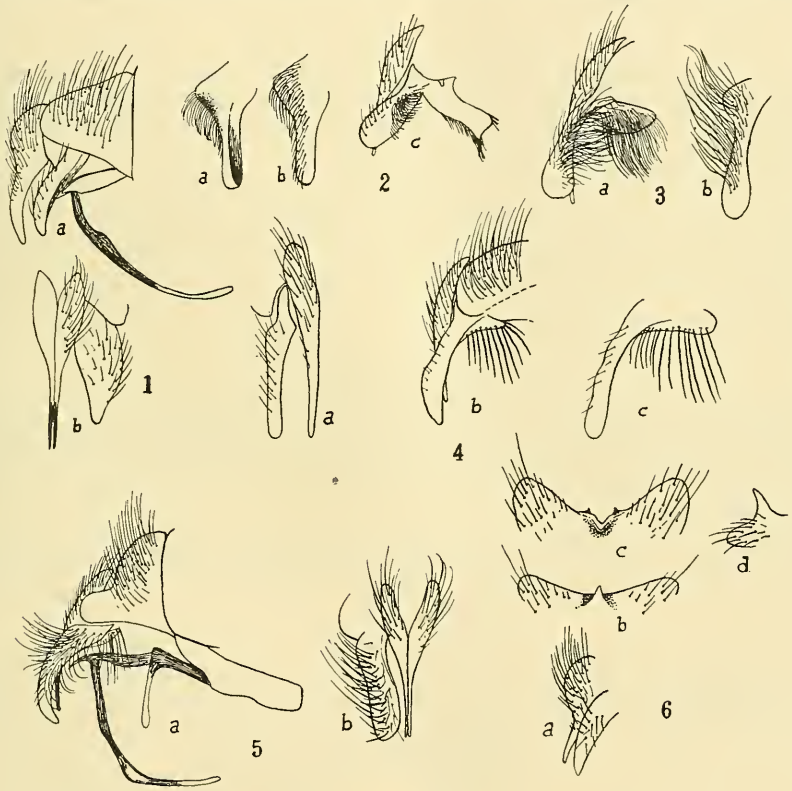
The wings are very distinctly shouldered and normally there is a conspicuous blackish-brown transverse mark near the bases. The sexes both have a complete series of short closely-placed setulae on the anterodorsal surface of the hind tibia which, in one species, at least in the female, has an outstanding bristle in it beyond the middle. It is noteworthy that in the females there is an irregular series of strong bristles on the anterior side of the mid femur which extends from the ventral surface at base upward to the anterior surface before middle, which series is present in no male now known to me. There is also usually on the hind femur in the females a more or less conspicuous series of several bristles on the basal half of the posteroventral surface, which is not found in any male but *cygnus*, and the bristles on the anteroventral surface of the same femur in the females are longer basally than apically, whereas in the males there are a number of long bristles on the apical third or more and none on the basal two-thirds.

The characters cited in the foregoing key to the species coupled with the figure of the hypopygium (Fig. 3) should serve to distinguish this species as that to which I assign the name. Length, 16–18 mm.

Habitat: Canberra, F.C.T.; Wentworth Falls, Sydney, Glenreagh, N. S. Wales; Eidsvold, Queensland.

SENOSTOMA VICTORIAE, n. sp.

A slightly smaller and rather darker species than *testacea*, most readily and reliably distinguished by means of the hypopygial structures of the male (Fig. 4*a*). The hind metatarsus has the dorsal hairs a little longer than in *testacea*, but



Text-figures 1-6.

Fig. 1.—*Senostoma biarmata*. *a*, male hypopygium from the side; *b*, same from behind, left side incomplete.

Fig. 2.—*Senostoma furcata*. *a*, inferior forceps from below; *b*, same from above; *c*, same from the side showing the basal process.

Fig. 3.—*Senostoma testacea*. *a*, inferior forceps from the side showing short densely haired basal process; *b*, same from above.

Fig. 4.—*Senostoma victoriae*. *a*, hypopygium left side from above; *b*, same in profile; *c*, inferior forceps of a possible variety.

Fig. 5.—*Senostoma regina*. *a*, hypopygium from the side; *b*, same from above, right side incomplete.

Fig. 6.—*Melinda minuta*. *a*, hypopygial forceps in profile; *b*, fifth sternite of male, ventral view; *c*, same more turned upward; *d*, apical process of same in profile.

they are much finer and shorter than the setulae on the anterodorsal surface of the hind tibia.

Habitat: Gisborne (holotype), Linga (paratypes), Victoria; and Buccleugh, N.S.W. The last specimen in the United States National Museum.

One female from Gisborne I refer here also.

A male from Mooroopu, N.S.W., in the United States National Museum has some long hairs on the sides of the prosternum and the dististylus as Figure 4*c*. This may be a distinct species, but I do not care to decide upon the basis of a single specimen in a genus which is rather markedly variable in the matter of hairing on various parts.

Senostoma furcata, n. sp.

Similar in general colour and size to *victoriae*, differing markedly in the structure of the hypopygium as shown in Figure 2, the basal fork of the inferior forceps being the most developed in the genus as far as my material shows and the hairing on it the shortest and densest. The hind metatarsus is rather slender and has a series of rather widely separated setulose hairs on the dorsum that are not nearly as long or as strong as the anterodorsal series on the hind tibia. The anteroventral bristles on the hind femur are not as strong or as long as those of *testacea*. Length, 12–13 mm.

Habitat: Canberra, F.C.T., 16.xii.1928, holotype (M. Fuller); paratype, Galston, 2.i.1926, N.S.W. (L. Wood).

Senostoma regina, n. sp.

Averaging a little smaller and of a more slender build than *furcata*, with the hypopygium as in Figure 5. The hind tibia has the anterodorsal series of setulae long and rather conspicuous, and the setulae on the dorsal surface of the hind metatarsus are almost equally long, while the tarsus is slightly thicker and shorter than usual.

Holotype ♂, and allotype, with a series of paratypes of both sexes, Eidsvold, Qld., December, 1922 (Mackerras). Four female paratypes, Marwood, near Mackay, Qld., January, 1924 (W. G. Harvey).

Senostoma sp.?

Two female specimens belonging to this group are distinguished from any of the others by the presence, beyond the middle of the hind tibia, of a single outstanding bristle in the anterodorsal series of setulae. Apart from this character and their being darker coloured, there is nothing to distinguish them from *regina*, though it is very probable that they belong to a distinct species that may have good characters in the structure of the hypopygium for its recognition. Length, 12–13 mm.

Locality: National Park, Gundamain, N.S.W., January, 1926 (Mackerras).

Senostoma biarmata, n. sp.

A larger species than *regina*, with much larger wings, but of the same general colour, with the abdomen largely testaceous and with a broad black dorsocentral vitta. The dark mark near the base of the wing is quite conspicuous and the shoulder is well developed, while the second section of the costa is about two-thirds as long as the third. The outstanding structures consist of the lack of a distinct posterodorsal bristle on the hind tibia, and the exceptional structure of

the inferior hypopygial forceps which are much broader than usual in the genus (Fig. 1). Length, 16 mm.

Holotype, S. Australia, no other data (J. B. Cleland).

SENOSTOMA CYGNUS, n. sp.

A much darker species than any of those already dealt with, the occiput and posterior half of genae black, the genal hairs fuscous, the thorax shining black, with grey dust and four rather inconspicuous dark vittae, the scutellum reddish-brown; abdomen black, showing reddish to a greater or less degree according to the angle from which it is viewed, the surface grey-dusted, with a narrow dark central dorsal line and traces of lateral dorsal checkerings. Legs black, knees narrowly reddish. Wings brownish hyaline, without any trace of a transverse dark mark near base. Squamae brownish-yellow, the margin not darker, the upper one about two-thirds as long as the lower. Halteres fuscous.

Head as in the other species but the epistome more produced, and the aristae haired as in *georgei*, the longest hairs about twice as long as its basal diameter. Ocellar bristles short but evident, the inner marginal bristles on the orbits more distinct than usual, and the fine hairs carried downward on the parafacials to near level of apex of third antennal segment. Thorax more strongly bristled than in typical species of the genus, the dorsocentrals complete though not large, the sternopleurals 2+1, and the scutellum with 8 marginal and 2 discal bristles. Postalars 3. Legs shorter and stronger than in the other species, the bristles stronger, the hind femur with long widely-spaced bristles on entire extent of anteroventral surface, shorter apically, and some long bristles on basal half of the posteroventral surface; hind tibia with the usual anterodorsal series of closely-placed setulae that are not as erect as usual, two posterodorsal and two anteroventral bristles; hind tarsus normal, the basal segment without long dorsal setulae, the apices of all tarsal segments with longer bristles than usual. Wings without distinct shoulder, though more explanate than in typical Tachinidae, the venation normal. Abdomen ovate, more nearly circular in cross section than usual, the apical bristles on third visible tergite longer and stronger than usual. Hypopygium not dissected. Length, 12 mm.

Holotype, Swan River, W. Australia (L. J. Newman).

A most exceptional species in coloration and development of the bristling, the type of hind femoral armature being similar to that of females of the other species. I do not consider that it is entitled to removal from this genus.

RUTILIA Robineau-Desvoidy.

Acad. Sci. Paris, Mem. Sav. Étrang., ii, 319, 1830.

RUTILIA TRANSVERSA, n. sp.

♂. Very similar to *splendida* Donovan, differing essentially in having the upper postocular orbits brassy instead of silvery-white-dusted, and the abdomen with a broad green transverse band on the anterior half or more of the third and fourth segments which are divided on the centre of the dorsum by a black vitta of about their own width.

Head orange-yellow, occiput with a metallic-green sheen which is carried on to the genae posteriorly but becomes obsolete before attaining their anterior margins; frons, parafacials, and postocular orbits densely yellow-dusted, the upper part of the latter brassy and slightly checkered; face less densely dusted, centrally below shining; antennae and palpi orange-yellow; aristae fuscous; hairs on frons

and upper half of parafacials fuscous, those on occiput and genae as well as on lower part of parafacials orange-yellow; postocular cilia black. Frons at vertex about one-third as wide as either eye; in *splendida* not more than one-fourth as wide as an eye, and the frontal orbits are narrower and less densely and shorter haired. The parafacials are wider and longer haired than in *splendida*. Thorax brilliant metallic-green, mesonotum with four black vittae, the central pair ceasing before midway from suture to hind margin, the sublateral pair a little longer, the humeri, two spots just in front of suture and large one behind suture as well as centre of the mesopleura dusted with white. Thoracic hairs all black, very dense and fine. Sternopleura black, with a green spot above. Abdomen coloured as thorax, second (first visible) tergite black in front and in centre, next two with a black apical fascia and central vitta, fifth with a black central vitta and very narrowly black in front and behind. Third tergite with a series of very short apical bristles, fourth with a much longer apical series; fifth not noticeable, depressed in centre at apex. In *splendida* there are usually no noticeable apical bristles on the third tergite. Legs black, bristled as in *splendida*. Wings as in *splendida*, the basal black mark very distinct. Squamae yellowish-white, the margin more noticeably yellow. In *splendida* the lower squama is brown or fuscous with darker margin, and the upper one much paler, almost white. Length, 13–14 mm.

Holotype and 2 paratypes, Swan River, W. Australia (J. Clark).

These male specimens more closely resemble the females of *splendida* than they do the male of that species because in the females the abdominal green fasciae are usually complete, while in the males they are almost invariably divided, the inner part being spot-like. In females of *splendida*, however, there is usually a constriction of the fascia on each side of the central black vitta where the break occurs in the other sex and there is no indication whatever of any constriction in the new species. In both species there are some black or fuscous hairs on either side near the anterior margin of the prosternal plate.

Rutilia micropalpis Malloch.

Proc. Linn. Soc. N.S.W., liv, 1929, 298.

I have before me four additional specimens of this species, two from National Park, N.S.W., one from Sydney, and one from Como, N.S.W., the last being one of the original localities. The specimen from Sydney is a female, the others are males.

Rutilia lepida Guérin.

Rev. Zool., vi, 1843, 268; Engel, *Zool. Jahrb.*, 50, 1925, 373.

A female specimen that I believe belongs to this species, though the pleural hairs are all black, has a puparium pinned with it. The general colour is brownish-black, and the form almost cylindrical, slightly tapered at each extremity, and the surface is quite coarsely transversely wrinkled. The spiracles are set in a deep terminal cavity and are of the same general form as I figured for *Chrysopasta elegans* Macquart in the previous paper in this series. Their general form is more regular in outline, not at all trifoliate and, though there are several slightly indicated raised lines, there is not a definite demarcation into separate plates; the separating line is also much narrower than in the other. Attached is a slip with the note "Bred from larva of beetle *Chlorobapta frontalis* Don". This note bears out my suspicion that the great majority of the Rutiliini will be found to

be parasitic upon larger Coleoptera despite the record of *Chrysopasta* from nest of a Termite.

I have before me a number of additional specimens that I refer to *lepida*, from New South Wales localities: Manly, Sydney, Barrington Tops, Como, and Wentworth Falls, as well as one from Canberra.

Subgenus NEORUTILIA, n. subgen.

I am erecting a new subgenus for the reception of a single species which differs from the more typical forms of *Rutilia* in having the hind tibia without a well developed fringe of setulae or isolated strong bristles on the anterodorsal surface. and no posterodorsal bristle; and the section of the costa between the apices of the subcosta and the first vein subequal in length to that between the apices of first and second veins. For other distinguishing characters see the description of the species below, which is the subgenotype.

RUTILIA (NEORUTILIA) SIMPLEX, n. sp.

General colour bright metallic blue-green. Occiput, genae, and frontal orbits emerald-green, the colour of latter merging into violet on the upper anterior part of each parafacial; epistome metallic-green with violet reflections. Mesonotum emerald-green, with four narrow incomplete cupreous vittae, blue on posterior margin behind the bristles; scutellum emerald-green; pleura becoming more bluish below. No definite white dust, except on humeral angles. Abdomen a little darker than thorax, each segment with a blackish-blue apical fascia and similar dorsocentral vitta; no distinct white dusting present. Legs black. Wings hyaline, with the usual dark basal mark pale brown and very small. Squamae fuscous, with darker margins.

Head large, as wide as thorax; frons at vertex about one-tenth as wide as head, widened to anterior margin, the interfrontalia dark brown to black. Vertical bristles one pair; ocellars lacking; no proclinate orbitals but numerous fine black orbital hairs which cease about level of apex of second antennal segment; facial carina normal; third antennal segment not as long as distance from its apex to epistome; arista bare; palpi normal. Face, vibrissal angle, and upper part of genae, pale-grey-dusted, the dust on lower part of postocular orbits white, becoming obsolete about middle of eye, the orbit green above. All genal hairs short and dark, the beard pale. Thorax rather more flattened than usual, the scutellum noticeably flattened and triangular. Mesonotum with shorter hairs than usual, the bristling normal, except that there are eight or ten bristles in a transverse series in front of the scutellum and the marginal scutellars number about 22. All hairs black. Legs black, not very strong, hind tibia almost circular in cross section, the usual anterodorsal series of short bristles lacking, there being but short stiff hairs present that are visible only with a high magnification and at a certain angle. Wings not as large as usual, distinguished by the lengthened section between the apices of subcostal and first veins. Halteres fuscous. Length, 20 mm.

Holotype, Eidsvold, Qld., December 22.

I believe this species forms a sort of connecting link between the species that I placed in my Group 1 containing *formosa* Rob.-Desv. and its allies, and section 2 of Group 2 containing *regalis* Guérin and its allies, as formulated in my paper published in 1929 as part xx of this series. I have seen no species, however, in which the hind tibia is as here and the costal divisions are similar to those of *simplex*.

It is unfortunate that it is impossible to give a complete revision of the species of this genus at this time, as they are undoubtedly of considerable economic importance apart from their interest as taxonomic constituents. I still have a number of unworked specimens on hand, but lack of time has prevented me making as complete a survey of them as I would like to, and I have no assurance that such an opportunity will present itself within the immediate future.

Subgenus Microrutilia Townsend.

Proc. Biol. Soc. Washington, xxviii, 1914, 23.

This subgeneric name will require to be used in place of *Senostoma* for that group of small species in which the sternopleura has 2 or 3 bristles, the hind tibia has one or more well developed bristles and usually a complete or partial fringe of setulae on the anterodorsal surface, and the arista is pubescent.

Townsend cited *minor* Macquart as his genotype when he described the group as a genus, but he had not seen the species. More recently (*Ann. Mag. Nat. Hist.*, ix, 1932, 39) he gave a few details of the type specimen which he saw in Paris, and this information leaves no doubt as to the identity of the concept. In this same paper he proposed the erection of *Prosenostoma* for the reception of *flavipes* B. and B. I can see no reason for this course, unless he considered that his examination showing only 2 sternopleural bristles justified it. I have examined some of the original specimens and several additional specimens of *flavipes*, and find that there are either 2 or 3 such bristles, the lower anterior one being variable in development, as usual in the genus where there are anterior bristles present.

Since the appearance of my paper in these Proceedings (liv, 1929, 305), in which I dealt with the group, I have received some additional material containing one new variety, which I briefly describe below.

Rutilia (Microrutilia) ruficornis Macquart, *var.* cupreiventris, n. var.

Differs from the typical form in having the four black mesonotal vittae much broader and more conspicuous and the abdomen more definitely coppery than green. In both sexes the genal hairs are all fulvous-yellow. The abdomen in the male is semi-diaphanous and coppery, with but faint greenish lustre, a dorso-central black vitta that narrows from base to apex and becomes violet coloured on fifth tergite; in the female the general colour is reddish-coppery with golden to violet reflections, rarely greenish-tinged. The legs in both forms are black in the male, with the tibiae more or less brownish-yellow, while in the female they are fulvous to brownish-yellow, with black tarsi. Length, 11–13 mm.

Holotype ♂, allotype, and 8 paratype ♀, Barrington Tops, Feb., 1925, Allyn Range, on *Leptospermum* (S.U. Zool. Exped.).

Chaetogaster Macquart.

Dipt. Exot., Suppl. iv, 1850, 225.

I have already dealt with this genus in one of my papers in this series (these Proceedings, liv, 1929, 314), and now add some additional data and two species. Brauer and von Bergenstamm did not see Macquart's species, but recently Townsend has published some notes on it, having seen the type-specimen in Paris. His short list of characters agrees with those I have already cited and my identification of *violacea* is evidently correct.

The two species represented by males may be distinguished as below. I have females only of the other.

A. Mesonotum black, distinctly shining, with the usual grey dusting and dark vittae, mostly bluish to greenish tinged, the scutellum more distinctly violaceous; abdomen semidiaphanous basally on sides; darker centrally and apically, with reddish-violet suffusion on nearly the entire dorsum, the whitish dust not conspicuous, best seen when viewed from behind ..... *violacea* Macquart

AA. Mesonotum dark metallic-green, with the same grey dusting and vittae as the genotype, scutellum concolorous, the violet tinge confined to extreme margins of both and very indistinct; abdomen entirely bright metallic-green, with quite faint whitish dusting basally ..... *viridis*, n. sp.

CHAETOGASTER VIOLACEA Macquart.

Dipt. Exot., Suppl. iv, 1850, 225.

I have before me examples from New South Wales and Victoria.

CHAETOGASTER VIRIDIS, n. sp.

Smaller than *violacea*, 14 mm. in length, and differing markedly in colour as in above diagnosis. The frons is also slightly narrower, there are no distinct presutural acrostichals present, the abdomen has the erect hairs on centre of the third, fourth, and basal half of fifth, tergites much less developed, and the setulae on the lateral curves of the tergites much less developed though still stronger than in most other genera.

Holotype, Comboyne, N.S.W. (Chisholm).

CHAETOGASTER ARGENTIFERA, n. sp.

Shining metallic blackish-blue, with distinct silvery-white dusting which is most conspicuous on the sides of the third to fifth abdominal tergites.

Head brownish-yellow, occiput darkened from near lower margin, bluish-black on upper half, with whitish dust that is dense and almost silvery on the upper postocular orbits, frontal orbits brownish, with white dust that merges into the yellowish dust of the upper parafacials, the interfrontalia dark brown; antennae and palpi orange-yellow, the former the darker; aristae fuscous. Frons at vertex about one-fifth of the head width, rapidly widening in front, the interfrontalia not obliterated at narrowest point; vertex with four verticals which are not very long, the ocellar bristles fine, directed forward and slightly divergent; each orbit with a complete inner marginal series of incurved bristles, no reclinate upper, and two proclinate supra-orbitals, the area laterad of the bristles finely haired, both the bristles and hairs ceasing at level of antennal insertion. Parafacial in profile about as wide as length of eye and more than twice as wide as third antennal segment; gena almost as high as eye; vibrissal angle slightly produced, the epistome projecting beyond it, vibrissae well developed and with a series of setulae above them on lower third of facial ridges; face with the central vertical carina well developed, narrow. Antennae with third segment about 2·5 times as long as second, rounded at apex; arista distinctly pubescent. Palpi longer than antennae, dilated slightly at apices; proboscis with the apical section nearly as long as lower margin of head, and rather thin. Eyes bare.

Thorax blackish-blue, the mesonotum with quite dense white dust when seen from behind at a low elevation, and with the usual dark vittae very narrow in that light. Mesonotum with the dorsocentrals 3 + 4, acrostichals 1 + 2, and the prealar rather short; presutural lateral area with only 2 bristles. Mesopleura with centre densely silvery-white-dusted. Legs black, tibiae centrally more

brownish. The femora not as noticeably attenuated apically as in the males. Wings hyaline, slightly infuscated near bases, veins fuscous, darker basally. Inner cross-vein oblique as usual, but a little beyond apex of level of subcosta instead of directly below it as in the males, the second costal division more appreciably shorter than first than in the males.

Abdomen broadly ovate, more distinctly metallic blue than the mesonotum, the sides of the third to fifth tergites showing silvery-white dust at apices that is carried to the extreme lateral edges below. The same tergites with discal and apical bristles centrally, the former rather variable, and without erect setulae on central line of dorsum. The tergites usually show a violet tinge on apices at the lateral curves. Squamae white, with narrow fuscous rim and fringe. Halteres fuscous. Length, 13 mm.

Holotype and one paratype, 25.2.1923, and 19.3.1922 respectively (G. Lyell). One specimen in rather poor condition differs slightly from the other two in the dusting of the fifth abdominal tergite, but I consider it is the same species.

Locality: Brisbane, Queensland, 12.12.1922, no collector's name on label.

In the other two species the wings are slightly brownish, with bright orange tinge basally on costa and the veins are also bright orange, which colour is also found in the squamae. It is also noteworthy that the presutural lateral area in the males has usually at least three, and generally four bristles in an oblique series running inward from the posterior to the anterior bristle. I have met with similar variation in the bristling of the different sexes in some other genera and do not consider this an important character for the separation of species, and certainly not a generic criterion.

Macrochloria Malloch.

Proc. Linn. Soc. N.S.W., liv, 1929, 326.

This genus was erected for the reception of an Australian species, and below I describe a variety of the genotype.

Macrochloria calliphorosoma, var. rufipes, n. var.

Differs from the typical form in having the legs entirely brownish-red, the tarsi but slightly darker, and the abdomen usually distinctly violet-blue and not metallic greenish-blue. Length, 12–15 mm.

Holotype ♂, Toronto, N.S.W., April, 1920. Allotype, same locality, no date. Paratypes, Kosciusko, 21.ii.1926 (Nicholson); Deervale, January, 1921; Lansdowne, December, 1923; and two from Toronto, N.S.W.

Tribe Actiini.

Actia Robineau-Desvoidy.

Acad. Sci. Paris, Mém. Sav. Étrang., ii, 1830, 85.

I have already published in this series of papers a key to all the species of this genus known to me from Australia (these Proceedings, lv, 1930, 303). The new species described below is very similar to *darwini*, and I restrict the description to those characters in which it differs from that species.

Actia quadriseta, n. sp.

♀. Differs from *darwini*, to which it will run down in my published key, in being larger and stouter, in having the setulose hairs on the third wing-vein extending distinctly beyond the level of the outer cross-vein, and the postsutural dorsocentral bristles in four well developed pairs. Length, 5 mm.

Holotype, Nyngan, N.S.W., no date (J. W. Armstrong).

Family Calliphoridae.

Pollenia Robineau-Desvoidy.

Acad. Sci. Paris, Mém. Sav. Étrang., ii, 1830, 412.

I have already described one species of this genus from Australia, and now am able to add two new species, which may be distinguished from each other as below.

Key to the Species.

1. Antennae and palpi orange-yellow, the latter slightly darkened at bases and the third antennal segment sometimes slightly darkened on upper margin; the fine hairs on sides of scutellum basally fuscous to black; male with the frontal orbits in front with more than one series of bristles, female with a number of long erect setulose hairs laterad of the inner marginal bristles on the orbits anteriorly; male hypopygium with the inferior forceps quite long and slender, their apices slightly spatulate; parafacials with black hairs; scutellum with six marginal and two discal bristles; hairs on postalar declivity black .... *hirticeps* Malloch

   Antennae and palpi fuscous, third segment of former usually reddish at base; the fine hairs on sides of the scutellum basally mainly yellow; male with the frontal orbits anteriorly furnished with one inner marginal series of bristles and some intermixed long setulose hairs 2

2. Mesopleura with black hairs except on the hind margin amongst the bristles; parafacial hairs all black and setulose; antennae entirely black; scutellum with six marginal and two discal bristles; fore tibia with two posterior submedian bristles (♂) ..... *nigrita*, n. sp.

   Mesopleura with nearly all the discal hairs yellow; parafacial hairs yellow on at least the lower half; antennae with the third segment reddish at base; scutellum with eight marginal and usually more than two discal bristles; fore tibia with one posterior bristle beyond middle ..... *stolida*, n. sp.

Pollenia hirticeps Malloch.

Proc. Linn. Soc. N.S.W., lii, 1927, 318.

I have before me a series of specimens which show that the antennae are usually entirely orange-yellow, rarely with the third segment browned above. The parafacial hairs are longer and stronger than in *stolida* and all black, while the frontal orbits in the male are much more densely bristled, with these in two or more series on most of the anterior third and the bristles weaker than those on the inner margin in *stolida*. The pleura are not as conspicuously yellow-haired as in that species, and the postalar declivity and the sides of the scutellum basally are black-haired. The hypopygial forceps are much more slender and more noticeably spatulate at apices than in *stolida*, and the first posterior cell of the wing is noticeably narrower at apex, sometimes practically closed.

Localities: Barrington Tops, Wentworth Falls (Dec., 1931), Blue Mts., and Sydney, N.S.W.

One small female from Sydney has only six marginal bristles on the scutellum, and the antennae appear shorter than usual.

Pollenia stolida, n. sp.

Very similar to *hirticeps*, but the antennae are black, with the apex of second and base of third segment reddish, the palpi are fuscous, the parafacials are partly yellow-haired, the postalar declivity and sides of the scutellum basally are also largely yellow-haired, the pale pleural hairs are golden-yellow and not yellowish-brown as in *hirticeps*, and instead of having the disc of the mesopleura fuscous haired it is golden-yellow-haired, while the hairs are finer and more crinkly.

Structurally the species are rather similar, though the frontal orbits are less densely bristled in the male and the inner marginal bristles anteriorly are much stronger than the outer lateral bristly hairs, and in the female there are no long rather erect setulose hairs laterad of the bristles as in *hirticeps*. The antennae are also a little longer, though this character is somewhat variable. The scutellum has usually eight strong marginal bristles and three or four discals. In the male the hypopygial forceps are stouter and shorter, with the apices of the inferior pair bluntly rounded. Length, 10 mm.

Holotype ♂, allotype, and 3 paratypes, Wentworth Falls, N.S.W., Dec., 1931 (F. H. Taylor).

There are two males and one female before me in which the parafacial hairs are entirely yellow and much finer than in the typical form. These may possibly represent a distinct species, but careful work will be required to establish their status.

Localities: Sydney (Dec., 1931) and Jenolan Caves, N.S.W.

POLLENIA NIGRITA, n. sp.

A smaller species than either of the other two, with entirely black parafacial hairs and antennae, the pale hairs of the thorax brownish-yellow and confined to the stigmatal region, the posterior margin of the mesopleura, the lower part of the pteropleura, and the basal part of the sides of the scutellum. The calyptrae are also paler than in the other two species, being greyish-white with yellowish margins as against yellowish-brown with darker margins.

Structurally rather similar to *stolida*, the frontal orbits narrower, each with a series of strong inner marginal bristles to well above middle and some much shorter lateral hairs; the parafacial hairs strong, setulose; scutellum with six strong marginal bristles and two discals. Abdomen more narrowly ovate than in *stolida*, the hypopygium concealed but evidently similar to those of the two other species in general structure. First posterior cell of the wing moderately wide. Length, 7·5 mm.

Holotype, Yaouk, N.S.W., about 3,500 feet altitude, Jan., 1931 (F. H. Taylor).

I believe that there will be a number of other species of this genus found in Australia, and to enable students of the group to make comparisons with my material, I am returning nearly all the specimens to Mr. Taylor so that they will be available in Australia.

One female has an egg protruding from the apex of the abdomen, so it appears that the species are oviparous. It will be of interest to discover what the larval habits of the genus are in Australia, as the nearest relative, *P. rudis*, of which we have information is an internal parasite of earthworms in Europe and North America.

MELINDA Robineau-Desvoidy.

Acad. Sci. Paris, Mém. Sav. Etrang., ii, 1830, 439.

MELINDA MINUTA Malloch.

PROC. LINN. SOC. N.S.W., liii, 1928, 328.

This species was inadvertently omitted from my revisional paper in Part xi of this series of papers (these PROCEEDINGS, lii, 1927, 299).

I now present figures of the hypopygial characters of the male, the remarkable spike-like process of the fifth sternite which is usually readily visible in dried

specimens when the abdomen is viewed from the side being a good distinguishing character for the species.

I can now record the species from Perth, Narrogin, and Beaconsfield, W. Australia.

Family Chloropidae.

In March, 1934, Dr. O. Duda published a paper (*Arb. Morph. Taxon. Ent. Berl.-Dahl.*, vol. 1, No. 1, p. 39) in which he described a number of Australian species of this family. Included in the paper there is a key to the species of *Parahippelates* Becker, which I consider is properly a synonym of the European genus *Lasiopleura* Becker, also the record of an African genus from Queensland. Below I deal with some of the species in Duda's paper, and add one new species, making 104 Australian species in our list.

Aprometopis punctipennis Duda.

Op. cit., p. 56.

This species is referable to *Caviceps* Malloch, and may be distinguished from *flavipes* Malloch by the presence of a deep black almost round small spot situated on the costa at the apex of the second vein. The inner cross-vein is very distinctly basad of the middle of the discal cell and the outer cross-vein is almost three times its own length from the inner instead of not twice that length.

Becker described *Aprometopis* from Africa. He laid particular emphasis upon the lack of the frontal triangle as a generic character, which might be considered to some extent as justification for Duda's course in placing his Australian species in the same genus, but he also states that the flattened mesonotum and habitus are similar to those of *Eribolus* Becker, a genus that occurs in Europe and North America. The latter and *Aprometopis* are both slender insects, and the figure of the head of the latter given by Becker is radically different from that of the Australian genus, being distinctly longer than high, with the face in profile not as high as the eye at middle, and the orbits showing a series of distinct setulae that are not found in *Caviceps*.

I have before me two examples of *punctipennis* from Palmerston, N. Australia, the type locality, that belong to the same Museum as the type material.

Genus Lasiopleura Becker.

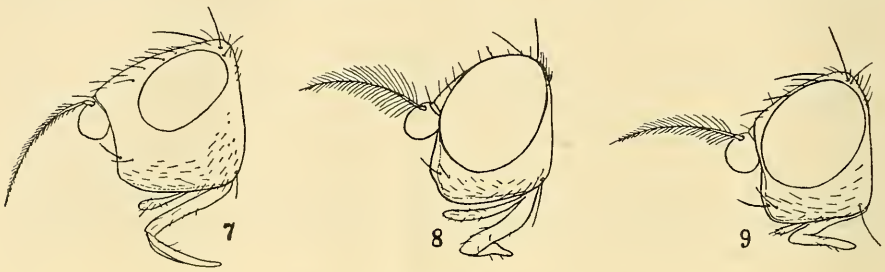
As noted above, this genus has previously been dealt with under the generic name *Parahippelates* Becker in this series of papers (Proc. Linn. Soc. N.S.W., lvi, 1931, 73). Before me now are three species from the Deutsches Entomologisches Institut in Berlin, from which collection Duda obtained the material for his paper referred to above. All three were unknown to me previously and had been set aside pending an opportunity to describe them, which course has been obviated by the appearance of Duda's paper. Some notes are presented below to make available to Australian students of the group data for the recognition of these species.

Lasiopleura conopsea Duda.

Op. cit., p. 45.

A bright orange-yellow to fulvous yellow coloured species, with the mesonotum shining, a dark spot on the ocellar region, and most of the abdominal dorsum and the apical two segments of each tarsus brown.

The very high genae of this species, as shown in Figure 7, with the yellow genal hairs, and very short haired aristae, readily distinguish it from the next two dealt with below. The bristle at the lower angle of the back of the head is



Text-figures 7-9.
Fig. 7.—*Lasiopleura conopsea* Duda.
Fig. 8.—*Lasiopleura rufescens* Duda.
Fig. 9.—*Lasiopleura nigripila* Duda.

much less developed than in the other two. The mesonotal bristles are moderately strong, with the acrostichals quite distinct. The hind tibial spur is slightly shorter than the apical diameter of the tibia, but it is strong and slightly curved. The third section of the costa is about 1·5 times as long as the third, and the outer cross-vein is about twice its own length from the apex of fifth vein. The scutellum has normally more than two discal setulose hairs. Length, 4–5·5 mm.

Cairns, N. Qld. (coll. Oldenberg; Deutsches Ent. Mus.). This is the type locality.

LASIOPLEURA RUFESCENS Duda.

Op. cit., 49.

This species is readily distinguished from any other known to me by the long hairs of the aristae, the longest of these being almost as long as the width of the third antennal segment. The hind tibial spur is curved and fully as long as the diameter of the apex of the hind tibia, and the wings are hyaline. Head in profile as Figure 8, the bristle at lower posterior angle strong and long. Frons in front orange-yellow, darkened on each side centrally. Thorax rather dull fuscous, more yellowish on pleura and apex of the scutellum. Mesonotum with the dorsocentrals and surface hairs rather short, the former consisting of one presutural pair and four pairs behind the suture, the disc with greyish dust and faint dark vittae. Scutellum with the basal pair of bristles shorter than the apical pair, and one pair of fine discal setulae. Legs testaceous, the femora and apices of tarsi more brownish. Second section of the costa about 1·25 times as long as third; outer cross-vein about 1·5 times as long as its own length from apex of fifth. Abdomen brown, slightly shining, the apices of the tergites paler and with grey dust. Length, 2·5–3·25 mm.

Palmerston,* N. Australia (coll. Oldenberg; D.E.I.). Type locality.

LASIOPLEURA NIGRIPILA Duda.

Op. cit., 48.

A paler species than the preceding one, with the general colour more like that of *conopsea*, though the mesonotum is darker. The setulae and bristles are

* Darwin was substituted for Palmerston under Proclamation dated March 3, 1911, which appeared in the *Commonwealth Gazette*, No. 18, March 18, 1911. I am indebted to Mr. K. R. Cramp of the Royal Australian Historical Society, for supplying me with this information.—F.H.T.

black and much stronger than in *rufescens*, especially on the frons and mesonotum, the latter having four or more pairs of decussate acrostichals quite bristle-like and, though the dorsocentrals are similarly arranged, they are as strong as the notopleurals, which is not the case in *rufescens*. The longest hairs on the aristae are also distinctly shorter than in that species though longer than in *conopsea*, being about half as long as the width of the third antennal segment (Fig. 9). Length, 3–3·5 mm.

Palmerston, N. Australia (coll. Oldenberg; D.E.I.). Type locality.

LASIOPLEURA GRISEOVITTA, n. sp.

♂. Head orange-yellow, the frons anteriorly, the face, and genae in front paler and with slight white dusting; antennae and palpi yellow, aristae brown. The upper half of each frontal orbit is dull dark brown, the ocellar spot is fuscous, the triangle is yellowish-dusted though slightly shining, and all the hairs and bristles are black except on the palpi where most of the hairs are white. Frons with three pairs of orbital setulae, the usual bristles and some setulose hairs in centre. Profile much as in *nigripila*, but the epistome more produced, the genae higher, and the face not as evidently carinate in centre. Longest hairs on aristae hardly longer than its basal diameter. Proboscis rather stout, the labellae short and fleshy. Thorax fuscous to brown, slightly shining, the mesonotum with a broad central stripe of grey dust that extends over the dorsocentrals and is most pronounced in front, laterad of this the surface is quite dark brown; scutellum not as noticeably grey-dusted, yellowish on margin. Bristles and acrostichals well developed, the former 1+3, the acrostichals extending in front of the dorsocentrals; the short surface hairs very minute and inconspicuous. Scutellum with the disc flattened, four marginal bristles, the basal pair slightly the shorter, and no discal hairs. Notopleurals as usual 1+1. Legs tawny yellow, the sensory area on hind tibiae showing darker. Hind tibial spur rather strong, slightly curved, and about as long as the tibial diameter. Wings brownish hyaline, veins brown. Abdomen dark brown, shining, the hypopygium brownish-yellow and bulbous. Halteres brownish-yellow. Length, 3 mm.

Type, Mt. Molloy, Qld. (F. H. Taylor).

Type in the School of Public Health and Tropical Medicine, Sydney University. Representatives of the three preceding species will be sent to the Australian Museum.

Genus PRIONOSCELUS Becker.

Ann. Mus. Nat. Hung., ix, 1911, 99.

This genus was originally described from New Guinea material and is distinguished from most genera in the Oscinosominae by the thickened hind femora, which are furnished below with short spines, and the curved hind tibiae which have a short apical process. I have not seen the genus, but Duda has recorded one species from Australia, the place of record being the paper already referred to herein.

PRIONOSCELUS MAGNUS Becker.

Op. cit., 99.

Becker states definitely that this species has two small setiferous warts on the apex of the scutellum as in *femoralis*, but Duda says that there are no such warts present. The principal distinction, if Duda is correct, between the two

species is then that in *magnus* the apex of the scutellum is unarmed and the palpi are black, while in *femoralis* there are two small setiferous warts at the apex of the scutellum and the palpi are red. Unfortunately, the two males he has recorded from Cairns appear to be intermediate between these forms, having the apex of the scutellum with two setiferous warts and the palpi black. His acceptance of *magnus* as the Australian species may be incorrect, but it would appear to be binding on us until more data are available.

In addition to the species listed above, Duda has described in his paper two species which he refers to *Gaurax*, both from Palmerston, N. Australia; they are *obscuripilus* and *pleuromaculatus*. I have not seen either species and, having no material in the genus from the type locality, can offer no data on their relationships.